

In the Claims

1. An instrument for intended use in monitoring or controlling a foam associated with a process or object, comprising:

a passive sensor for generating an output signal representative of an acoustic emission associated with the foam; and

a controller in communication with the passive sensor for receiving the output signal and providing a response.

2. The instrument of claim 1, wherein the object is a liquid and the response comprises a signal for activating a source of foam suppressant positioned adjacent the liquid.

3. The instrument of claim 1, wherein the response comprises a signal for activating an alert selected from the group consisting of a signal for generating an audible alarm, a signal for dialing a telephone number, and a signal for displaying data on a display device.

4. The instrument of claim 1, further including a plurality of passive sensors positioned adjacent to the process or object.

5. The instrument of claim 1 in combination with a system for testing a mineral admixture for making concrete associated with the foam, and further comprising a vessel for receiving the mineral admixture.

6. The system according to claim 5, further including a source of an air entraining agent, and wherein the response comprises a signal for causing the source to add the air entraining agent to the mineral admixture in the vessel.

7. The system according to claim 5, further including an agitator associated with the vessel, and wherein the response comprises a signal for activating the agitator.

8. The instrument of claim 1 in combination with a system comprising a column of liquid susceptible to foaming and at least one input for receiving a flow of gas such that the foam is created on a surface of the liquid column.

9. The system according to claim 8, wherein the passive sensor is a hydrophone positioned at or below the surface of the liquid in the column.

10. The system according to claim 8, further including a plurality of passive sensors, wherein a first of the sensors is positioned above the surface of the liquid and a second of the sensors is positioned at or below the surface of the liquid.

11. The instrument of claim 1 in combination with a system for heating and curing of a precursor material including the foam, said system including a heater for heating the precursor material.

12. The system of claim 11, wherein the response is to control the heater or to generate a signal to remove the precursor material from the heater.
13. A method of monitoring and controlling a process involving a foam, comprising:
detecting an acoustic emission of the foam; and
actuating a response based on the detected acoustic emission.
14. The method of claim 13, wherein the detecting step comprises placing a passive sensor in acoustic communication with the foam.
15. The method of claim 13, wherein the actuating step is completed only upon reaching a threshold level of the acoustic emission and further comprises sending an alert selected from the group consisting of generating an audible alarm, dialing a telephone number, or displaying data on a display device.
16. The method of claim 13, wherein the actuating step comprises automatically controlling a level of the foam.
17. A method of testing a mix used to form concrete, comprising:
adding an agent to the mix;
detecting one or more acoustic emissions from the mix; and
determining whether an additional amount of the agent is required.
18. The method according to claim 17, wherein the agent is an air entraining agent and the step of measuring comprises receiving the acoustic emissions from a foam associated with the mix.
19. The method according to claim 17, wherein the adding and detecting steps are accomplished using only a sample of the mix.
20. The method according to claim 17, further including determining whether to add an additional amount of the agent based on the detected acoustic emissions, and when an appropriate amount of the agent is added, creating a larger batch of the mix by adding an amount of the agent proportional to the amount added to the sample.